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Commentary on
*He Tirohanga
Mokopuna: 2016
Statement on
the Long-Term
Fiscal Position*



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*He Tirohanga
Mokopuna: 2016
Statement on the
Long-Term Fiscal
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Overview

A regular and wide-ranging assessment of the factors that could affect the Government's long-term financial position can help clarify what is important for the future of New Zealanders. It also provides current and future governments with the information they need for long-term financial management and decision-making.

Long-term financial management and stewardship requires an outlook that considers future uncertainties and plausible scenarios. It is about good planning, not perfect prediction.

New Zealand is fortunate that the Treasury has the statutory authority and independence to take such a long-term outlook. The Treasury considers the long-term fiscal statement as a central part of its stewardship role.

The Treasury's latest long-term fiscal statement, *He Tirohanga Mokopuna: 2016 Statement on the Long-Term Fiscal Position* (the 2016 Statement), was published in November 2016 and continues to evolve in positive ways from previous statements. In particular, the discussion has become more wide-ranging and reflects the Treasury's framework for higher living standards as well as feedback from consultation with the public.

The 2016 Statement and the background papers published alongside it contain important information about the many challenges and opportunities that New Zealand might face in the future. However, the supporting financial projections focus primarily on demographic change and the consequences for future superannuation and healthcare spending. Although these are important matters, New Zealand and the Government are facing a more uncertain future and a broader set of challenges than just a changing demographic.

As we found in our review of the previous long-term fiscal statement in 2013, the financial projections provide little insight into the size, timing, financial effect, or interconnectedness of any other potential challenges and opportunities – individually or as a set of scenarios. Important concerns, such as the financial consequences of further shocks (including natural disasters), are not presented or analysed. As well as this, some projection assumptions, such as excluding New Zealand Superannuation Fund assets from the calculation of net debt, are questionable.

As a result, the financial projections can be too easily dismissed by current and future decision-makers, reducing the value of the 2016 Statement. Better projections would have allowed useful analysis and insights for planning and managing the uncertainties that surround the Government's long-term financial position.

The Treasury has progressed its thinking and analysis about whether improving social outcomes provides financial benefits as well as improving living standards. However, it acknowledges that its financial projections do not include many significant factors that could affect the long-term financial position of the Government. Further work is needed to prepare long-term financial projections based on a set of plausible scenarios of different futures for New Zealand, the public sector, and the Government.

I consider that, in preparing future long-term fiscal statements, the Treasury should:

- prepare a set of plausible scenarios in support of its financial projections;
- establish a clear rationale and uniform approach to projecting these scenarios;
- reassess the consistency and reasonableness of the key projection assumptions;
- reconsider the rationale for excluding New Zealand Superannuation Fund assets from the primary financial sustainability indicator of net debt;
- explore different approaches to measuring financial sustainability; and
- obtain expert financial modelling advice.

These improvements should better align the financial projections with the positive work the Treasury has done with the wider narrative of the 2016 Statement. It would also help people to better understand the dynamic relationship between the well-being of New Zealand and the financial sustainability of the Government.

I thank the Treasury for helping my team with this review. I also thank Professor Norman Gemmill, Chair in Public Finance at Victoria University of Wellington, for his expert advice and help.



Greg Schollum
Deputy Controller and Auditor-General

17 July 2017

Introduction

- 1.1 In November 2016, the Treasury published *He Tirohanga Mokopuna: 2016 Statement on the Long-Term Fiscal Position* (the 2016 Statement). The Treasury is required to produce long-term statements at least once every four years. We have previously commented on the 2013 statement, *Affording Our Future: Statement on New Zealand's Long-term Fiscal Position* (the 2013 Statement).
- 1.2 In this report we comment on the 2016 Statement. The Treasury published a number of background papers alongside the 2016 Statement, and we refer to these where relevant.
- 1.3 Financial sustainability is of critical interest to our role in giving an independent view of public sector performance and accountability to Parliament and New Zealanders. As in our 2013 report, we wanted to look at the 2016 Statement in terms of how it describes what the state of the government finances might look like and what challenges and opportunities the public sector and the country as a whole might deal with in the future.
- 1.4 Professor Norman Gemmill, Chair in Public Finance at Victoria University of Wellington, provided expert advice, particularly on the economic aspects of our work.
- 1.5 In this work, we considered whether the Treasury has:
 - considered the long-term outlook and the challenges and opportunities for the Government's finances over the long term; and
 - communicated its findings in an understandable, informative, and useful way.
- 1.6 Various terms can be used interchangeably when talking about financial projections. For consistency and clarity, we have:
 - used the term “financial” instead of “fiscal”, except when referring to the Treasury's long-term fiscal statements, its legislation, or when fiscal is used as part of other people's work; and
 - used the term “projection” instead of “forecast” or “prediction”, except where legislation specifically refers to forecasts.
- 1.7 The term “scenario” is used a lot in this report. In the context of this report, we use scenario to mean a description of what might plausibly happen in the future – this could be one situation or a set of future circumstances. A scenario is not a forecast or a prediction – it is one possible way the future could unfold. For this reason, developing a scenario involves more than adjusting just one variable.

- 1.8 In this Part, we:
- explain the requirement for the Treasury to prepare a long-term fiscal statement;
 - summarise previous long-term fiscal statements and our first review in 2013;
 - outline other approaches to long-term projections;
 - review the Treasury’s concerns with the sustainability of public finances; and
 - outline what we cover in the rest of this report.

The legislative requirement for a long-term fiscal statement

- 1.9 The Public Finance Act 1989 (the Act) is one of the five major statutes that underpin the public sector’s financial management system. The Act’s objective is to help improve public sector performance by promoting “responsible fiscal management” through increased transparency and greater accountability.¹
- 1.10 Under the Act, there are two annual documents that set out the Government’s fiscal ambitions:
- the Budget Policy Statement, which explains the Government’s shorter-term intentions; and
 - the Fiscal Strategy Report, which explains the Government’s longer-term objectives.
- 1.11 The Treasury prepares forecasts of the Government’s economic and financial performance and position to support these two documents. These forecasts are:
- regular economic and fiscal updates (the Budget or half-year or pre-election updates), which reflect the Government’s current policies and intentions for the upcoming five-year period. These updates are collated from individual agency forecasts through the Government’s internal management reporting database, CFISNet; and
 - regular fiscal strategy projections, published in the *Fiscal Strategy Report* and covering the 10 years after the initial five-year forecasts. This medium-term outlook follows the same structure as the *Economic and Fiscal Update* and assumes that current policies and intentions remain in place for the 10-year period.

¹ Public Finance Act 1989, section 1A(2)(c). The Act also covers lines of accountability, parliamentary scrutiny, and reporting obligations.

- 1.12 The fiscal responsibility provisions of the Act specify that the Treasury must prepare “a statement on the long-term fiscal position” at least once every four years. The Act does not specify the content of the statement or how it should be prepared. It requires only:
- a statement of responsibility asserting that the Treasury has used its best professional judgements about the risks and the outlook; and
 - disclosure of significant assumptions underlying any projections.
- 1.13 The Secretary to the Treasury is responsible for preparing the long-term fiscal statement.

Previous long-term fiscal statements and our first review in 2013

- 1.14 Including the 2016 Statement, the Treasury has published four long-term fiscal statements since 2006. Figure 1 summarises the first three statements.

Figure 1
The Treasury’s previous long-term fiscal statements

	2006	2009	2013
Title	<i>New Zealand’s Long-term Fiscal Position</i>	<i>Challenges and Choices: New Zealand’s Long-term Fiscal Statement</i>	<i>Affording Our Future: Statement on New Zealand’s Long-term Fiscal Position</i>
Economic context.	Strong financial position and benign economic outlook.	Weaker financial position and challenging economic outlook (after the global financial crisis).	Recovering financial position and challenging economic outlook (after the global financial crisis and the Canterbury earthquakes).
Analytical approach.	Technical and economic with little external engagement.	Less technical but still an economic focus with little external engagement.	Even less technical with significant public engagement and a wider focus on living standards. Background documents contain technical detail.
Main message.	Long-term financial issues with population ageing.	Long-term financial issues with population ageing.	Long-term financial issues with population ageing.
Net debt at end of projection period.	98.7% of gross domestic product (2050).	223.4% of gross domestic product (2050).	198.3% of gross domestic product (2060).

- 1.15 Our first review and commentary was on the 2013 Statement. Overall, we found that the Treasury had done a good job in preparing the 2013 Statement, and had presented it in a way that was understandable and engaging. However, we found there was some room for improvement – particularly with how the projections supported the statement. In particular, we noted:
- a narrow focus, with the projection considering only the healthcare and superannuation challenges associated with population ageing;
 - a lack of feedback effects and analysis of uncertainty;
 - issues with the ongoing use of net debt as the primary measure of financial sustainability and its composition, excluding the assets of the New Zealand Superannuation Fund; and
 - limited accounting logic, integration, and usability of the projection model.

Other approaches to long-term financial projections

- 1.16 When we looked at the 2013 Statement, we identified nine other countries that carried out similar long-term financial projection exercises. As part of our 2016 work, we reviewed how three of these countries approached long-term financial projections in more detail.² We also reviewed what other recent research papers have said about how governments should approach long-term financial projections (see paragraph 1.20).
- 1.17 Figure 2 summarises the main features of the approaches to financial projections taken by different governments. The Treasury notes there are also differences in the way countries present their long-term financial projections. In its view, there is no “correct or fully consistent way” to carry out a long-term financial projection exercise.³
- 1.18 Most countries in Figure 2 use demographic changes and focus on healthcare and/or pension spending in their financial projections. The United Kingdom’s and Australia’s financial projections appear to be largely consistent with the Treasury’s approach. The exception in the table is the United States of America, which, although not allowing for a formal analysis of shocks or uncertainty, does provide a broader outlook and allows for revenue growth and feedback effects (for example, how the interest rate on debt rises as the amount of debt taken on increases).

2 The other six countries’ reports were in a different language, only in summary form, or could not be obtained from the usual public sources.

3 The Treasury (2016), “Long-Term Fiscal Analysis – Testing our synthesis”. An internal seminar presentation, slide 9.

Figure 2
Approaching long-term financial projections – New Zealand and other countries

Financial projection includes	New Zealand	Australia	United Kingdom	United States of America
Demographic ageing effect	Yes	Yes	Yes	Yes
Healthcare and/or pension spending growth*	Yes	Yes	Yes	Yes
Other spending growth*	Some**	Some***	Some†	Yes††
Revenue growth*	No	No	No	Yes
Sensitivity testing of projections	Some	Some	Some	Extensive
Formal analysis of uncertainty	No	No	No	No†††
Formal analysis of shocks	No	No	No	No
Formal analysis of difference from previous projections	No	Yes	Yes	Yes
Testing of financial-economic feedbacks	No	No	No	Yes

Sources: Commonwealth of Australia (2015), *2015 Intergenerational Report Australia in 2055*, Canberra; Office for Budget Responsibility (2017), *Fiscal sustainability report*, London; Congressional Budget Office (2016), *The 2016 Long-Term Budget Outlook*, Washington D.C.

* Relative to gross domestic product growth.

** For educational spending.

*** Includes education and disability insurance.

† Includes education, student loan growth, and private pension/savings tax subsidies.

†† Includes, for example, defence, transport, housing, and justice. The modelling distinguishes between discretionary and mandatory spending.

††† Has an extensive chapter on testing sensitivities to economic and fiscal conditions.

1.19 The approach of not allowing for other shocks and uncertainty is at odds with a number of research papers from international organisations and academics. For example, in a review of the use of strategic foresight in the United Kingdom, Singapore, and the Netherland’s public sectors, it was observed that:

*In an interdependent and complex world ... [many] governments have realized that a single-issue focus is often insufficient in dealing with emerging threats and opportunities.*⁴

1.20 Other papers have also stressed the importance of identifying, analysing, and managing the financial consequences of shocks and uncertainty on a government’s long-term financial position. For example:

- As part of an external review of the Treasury’s fiscal policy advice, Teresa Ter-Minassian, International Economic Consultant and former Director of the International Monetary Fund’s Fiscal Affairs Department, looked at the

4 Habegger, B (2009), *Strategic foresight in public policy: Reviewing the experiences of the UK, Singapore, and the Netherlands, Switzerland*, page 49.

Treasury's long-term analysis work in the 2013 Statement. Although noting that the scope of the analytical work in 2013 was impressive, Ter-Minassian suggested that improvements could be made to the projection model by integrating feedback loops and incorporating sensitivity analysis of shocks to demonstrate the need for fiscal buffers.⁵

- A June 2016 paper by the International Monetary Fund noted that “Comprehensive analysis and management of fiscal risks can help ensure sound fiscal public finances and macroeconomic stability”. The analysis showed that (on average) countries have experienced a significant fiscal shock every 12 years, costing about 6.0% of gross domestic product (GDP). More severe fiscal shocks can occur (on average) every 18 years.⁶
- A 2011 paper by the Organisation for Economic Co-operation and Development (OECD) on improving risk governance for global shocks outlined the global shocks that have taken place since 2009. Despite the uncertainty of events like these, shocks can be qualified and evaluated by using previous experiences.⁷
- In a 2011 background research paper, the Treasury demonstrated the usefulness of scenario analysis by examining how severe shocks could affect the Crown's financial position. The paper suggested that a sustained decline in tax revenue presented the main risk and that, although low government debt provides a significant buffer to this risk, rapid changes to tax or government spending might also be required.⁸

The Treasury's concerns with the sustainability of government finances

- 1.21 Since the 2013 Statement, the Treasury has published two reports that discuss the challenges and opportunities that could affect the medium- to long-term sustainability of the Government's finances.
- 1.22 These reports, *Holding on and letting go* and the *2014 Investment Statement*, were both published in 2014. In these reports, the Treasury acknowledged that the world had changed significantly in recent years and would continue to do so.⁹ The types of challenges and opportunities that accompany these changes are not just economic – they could also include education, jobs, the natural and

5 Ter-Minassian, T (2014), *External Review of the Treasury's Fiscal Policy Advice*, Washington DC, page 50.

6 International Monetary Fund (2016), *Analyzing and Managing Fiscal Risks – Best Practices*, Washington DC, Executive Summary and page 7.

7 Organisation for Economic Co-operation and Development (2011), *Future Global Shocks – Improving Risk Governance*, pages 2 and 14.

8 Fookes, C (June 2011), *Modelling Shocks to New Zealand's Fiscal Position*, see the Abstract.

9 The Treasury (2014), *Holding on and letting go: Opportunities and challenges for New Zealand's economic performance*, Wellington, page i.

physical environment, health and safety, and personal and social well-being.¹⁰ They will also affect the future composition and size of the Government's assets and liabilities.¹¹ Managing such challenges and opportunities will need a strong economy and a state sector with a strong and resilient balance sheet.

1.23 Aligned with these earlier reports, the 2016 Statement explains that various factors affect the financial sustainability of future governments over the long term.¹² Alongside government policy options, such as changes to taxation or spending areas, these factors include New Zealand's:

- ageing population;
- natural resource risks (climate change, water quality, natural disasters);
- economic growth;
- education, skills, and employment outcomes; and
- social inclusion (for all New Zealanders).

1.24 These areas of discussion are consistent with the results of the Treasury's public engagement, which were summarised in their reflections document, *Conversations about things that matter*. The most common themes that emerged from consultation with the public were the natural environment, society, skills and education, and the economy.

1.25 The 2016 Statement's main conclusion is that:

While current government finances remain relatively strong, fiscal pressures are projected to build over the next 40 years. Population ageing is projected to apply pressures through slower revenue growth (resulting from less participation) and increased expenses (primarily through New Zealand Superannuation and healthcare). In the future, we may also see threats to our natural resources (e.g. climate change, water quality and natural disasters) as a fiscal pressure.¹³

Structure of this report

1.26 In Part 2, we outline the Treasury's intentions and what the 2016 Statement tells us about the well-being of New Zealand and the challenges and opportunities that governments might face in the future. We also look at how well the financial projections support the 2016 Statement.

10 The Treasury (2014), *Holding on and letting go: Opportunities and challenges for New Zealand's economic performance*, Wellington, page iii.

11 The Treasury (2014), *2014 Investment Statement: Managing the Crown's Balance Sheet*, Wellington, page 1.

12 The Treasury (2016), *He Tirohanga Mokopuna: 2016 Statement on the Long-Term Fiscal Position*, Wellington, page 6.

13 The Treasury (2016), *He Tirohanga Mokopuna: 2016 Statement on the Long-Term Fiscal Position*, Wellington, page 6.

- 1.27 In Part 3, we review the 2016 Statement's projections and how they compare with previous statements. We also consider what the projections tells us about the financial challenges and opportunities ahead.
- 1.28 In Part 4, we consider the 2016 Statement's projection model, how it has changed since 2013, and review the reasonableness and robustness of the assumptions that are used.

The value of the 2016 Statement

2.1 In this Part, we consider the Treasury's intentions and audience and what the 2016 Statement says about the nature of the financial challenges and opportunities ahead. We also consider how the Treasury's projections support the wider discussion of the 2016 Statement.

2.2 The main variables presented in the 2016 Statement are based on the "core" Crown, which includes all the main activities of the Crown but excludes, for example, Crown entities and state-owned enterprises. To be consistent with the Treasury's approach, our comments also focus on the core, rather than the consolidated, activities of the Government.

The Treasury's intentions and audience

2.3 The fiscal responsibility provisions in the Act were amended in 2004 to include the requirement for a statement on the Government's long-term fiscal position. However, there was little Parliamentary debate about the purpose of these statements.

2.4 In a background paper to the 2013 Statement, the Treasury discussed the reasons for the fiscal responsibility provisions, which were:

... a response to shocks (such as Britain going into the Common Market and the 1970s' oil price shocks), unaffordable policies (such as Think Big, or supplementary minimum prices for sheep meat) and the inevitable consequence: huge external indebtedness and lower living standards. These fiscal provisions reflected a resolve never to be so exposed and vulnerable again.¹⁴

2.5 Because the Act does not specify what contents are required for the long-term fiscal statement or how it should be prepared, the Treasury has considerable freedom in its design, preparation, and communication.

2.6 In publicly introducing the Treasury's first statement in 2006, the then Secretary to the Treasury outlined two intentions:

- *to increase the quality and depth of public information and understanding about the long-term consequences of government spending and revenue decisions;*
- *to support finance ministers in pursuing a prudent fiscal course through time and to assist with improving public sector performance.¹⁵*

¹⁴ The Treasury (2013), *Long-term Fiscal Projections: Reassessing Assumptions, Testing New Perspectives*, Wellington, page 32.

¹⁵ Whitehead, J (2006), *Facing Fiscal Futures*. A paper presented to the New Zealand Association of Economists' annual conference by the then Secretary to the Treasury on 28 June 2006.

- 2.7 The Treasury’s website reaffirms these intentions:
*The Treasury sees the purpose of these statements as being to increase the quality and depth of public information and understanding about the long-term consequences of policy decisions and to assist governments in making fiscally-sound decisions.*¹⁶
- 2.8 These intentions emphasise the value of better long-term information for long-term decision-making.
- 2.9 Consistent with the Treasury’s intentions, the two main audiences for the long-term fiscal statements are the general public and the Government. The statements and their projections are also used externally by international organisations (such as the OECD) and internally to influence the Treasury’s policy analysis and by other government agencies (including the Ministry for Business, Innovation and Employment, the Productivity Commission, and the Retirement Commissioner).
- 2.10 In introducing the 2016 Statement in November 2016, the Secretary to the Treasury was clear that, for the Treasury, the 2016 Statement should continue to reinforce “the importance of policy advisers and decision-makers continuing to keep a focus on the medium to long-term” and include “projections of government revenue, spending and debt, and analysis of the factors that will drive these in the decades ahead”.¹⁷ Particular emphasis was placed on incorporating the Treasury’s Living Standards Framework,¹⁸ the effects of potential shocks, and the need to build “fiscal buffers”.

The financial challenges and opportunities ahead

- 2.11 The 2016 Statement is clearly written and with less technical content than earlier long-term statements. It is organised around three simple messages:
- it is crucial that the relationship between the Government’s long-term financial sustainability and New Zealand’s well-being is managed;
 - there are many challenges and opportunities that New Zealand could face in the future; and
 - the financial consequences of population ageing are significant.
- 2.12 We consider each of these messages below.

¹⁶ See treasury.govt.nz.

¹⁷ “The Treasury Publishes Statement on the Long-Term Fiscal Position”, treasury.govt.nz.

¹⁸ See the material on Higher Living Standards in the *About Treasury* section of the Treasury’s website, at treasury.govt.nz.

Managing the relationship between the Government's long-term financial sustainability and New Zealand's well-being is crucial

- 2.13 Central to the 2013 and 2016 Statements is the understanding that the Government's long-term financial sustainability will affect, and will be affected by, New Zealand's well-being. If nothing is done to understand, plan for, and manage this relationship, a deterioration in well-being and/or public finances could follow.
- 2.14 To manage this relationship, the Government needs to understand and plan for the challenges and opportunities that could affect its spending and how that spending is funded.
- 2.15 Building on the 2013 Statement, the 2016 Statement continues to focus on the Treasury's Living Standards Framework as one way to better understand New Zealand's well-being. The framework is used by the Treasury to "incorporate a broad range of factors, distributional perspectives and dynamic considerations"¹⁹ into its policy analysis and advice.
- 2.16 Well-being is expressed through the four capitals of the Treasury's Living Standards Framework. These are financial and physical (combined) capital, human capital, social capital, and natural capital. It is the Treasury's view that public policy enhances the capacity of these four capitals to generate well-being if that policy is sustainable, equitable, socially cohesive, resilient, and generates economic growth. We agree.
- 2.17 Through the Living Standards Framework, the Treasury has considered whether improving social outcomes provides financial benefits as well as improved living standards. Various possibilities were discussed, including broader investment in human capital and achieving more equitable outcomes for Māori.
- 2.18 We consider this a positive step in illustrating and understanding the relationship between the Government's long-term financial sustainability and New Zealand's well-being.

There are many future challenges and opportunities New Zealand could face

- 2.19 As noted earlier, the fiscal responsibility provisions of the Act (which contain the requirement for a long-term fiscal statement) were, at least in part, a response to the challenges that New Zealand faced at the time when the Act was passed.
- 2.20 There is no reason to think that New Zealand will not face other challenges and opportunities.

¹⁹ The Treasury (2016), *He Tirohanga Mokopuna: 2016 Statement on the Long-Term Fiscal Position*, Wellington, page 8.

- 2.21 As such, the 2013 and 2016 Statements both take a wider perspective of what could affect the Government's long-term financial position than the Treasury did in the 2006 and 2009 Statements.
- 2.22 The 2016 Statement describes many of the future challenges and opportunities that could affect New Zealand's well-being in detail. These challenges and opportunities include:
- immigration;
 - education, skills, and employment;
 - housing;
 - natural resource risks, including climate change, water quality, and natural disasters; and
 - social inclusion and inequality.
- 2.23 The main message from the 2016 Statement is that, although current government finances remain relatively strong, population ageing together with social, environmental, and economic shocks are all risks to the Government's long-term financial sustainability.

The financial consequences of population ageing are significant

- 2.24 Despite including a wider discussion about future challenges and opportunities, the 2016 Statement considers the financial consequences of only one challenge – an ageing population – and its potential effect on government spending and net debt.
- 2.25 The 2016 Statement provides two financial projections based on an ageing population. The first assesses the scale of the financial challenge. It assumes that nothing is done to manage the financial consequences of population ageing and all resulting operating deficits are funded by debt. The second projection shows how the financial challenge can be mitigated. It is based on reducing most government expenses as a share of GDP so that the potential operating deficits are reduced.
- 2.26 There is also some analysis of other options for how to lessen the financial challenge associated with population ageing.
- 2.27 Figure 3 is taken from the 2016 Statement and summarises the first financial projection, showing what could happen to net government debt through to 2060.²⁰

²⁰ There is no summary table in the 2016 Statement showing how government expenses could be reduced to mitigate these potential operating deficits – this is shown as a line graph instead.

Figure 3
Summary financial projection in the 2016 Statement

Core Crown % of nominal GDP	2015	2030	2045	2060
Tax revenue	27.6	28.6	28.6	28.6
Other revenue	2.3	2.4	2.4	2.5
Total government revenue	29.9	31.0	31.0	31.1
Healthcare	6.2	6.8	8.3	9.7
New Zealand Superannuation	4.8	6.3	7.2	7.9
Education	5.3	5.4	5.5	5.7
Law and order	1.5	1.4	1.4	1.4
Welfare (excluding New Zealand Superannuation)	4.2	4.5	4.7	4.7
Other	6.3	6.7	6.7	6.7
Debt-financing costs	1.6	2.2	5.3	11.0
Total government expenses	30.0	33.3	39.1	47.1
Revenue less expenses (operating balance)	(0.1)	(2.3)	(8.1)	(16.0)
Net government debt (without New Zealand Superannuation Fund assets being deducted)	25.1	32.5	94.0	205.8
Net government debt (with New Zealand Superannuation Fund assets being deducted)	12.9	11.5	68.9	174.1

Source: The Treasury (2016), *He Tirohanga Mokoopuna: 2016 Statement on the Long-Term Fiscal Position*, Wellington.

- 2.28 The projection in Figure 3 summarises the financial outlook for all the main classes of government revenue and expenditure from 2015 to 2060 as a percentage of GDP. Only two aspects of government spending show any material change – healthcare and superannuation. Interest costs also increase significantly because all operating balance deficits are assumed to be funded by debt.
- 2.29 There are two net debt projections. Net debt without New Zealand Superannuation Fund assets being deducted is the Treasury’s main financial indicator, and is the indicator that is referred to the most in the 2016 Statement.
- 2.30 Each of the past long-term fiscal statements have also shown that population ageing could create higher healthcare and superannuation costs and that this will become financially unsustainable if entirely funded by debt. However, the many other potential challenges and opportunities that are discussed in the wider narrative of the 2016 Statement indicate a more uncertain future than the Treasury’s financial projection, focused only on population ageing, suggests.

- 2.31 In comments to the Finance and Expenditure Select Committee in February 2017, the Treasury used the analogy of the Government as a ship “sailing towards a reasonably far off reef”²¹ – the reef, in this context, being the problems presented by population ageing. In the 2016 Statement, the Treasury clearly sets out the size of this “reef”, and further information about it – such as its location, and what would happen if we hit it. However, to use the Treasury’s analogy, although there may be favourable tailwinds and a series of storms on the horizon, the 2016 Statement gives little information about their direction, size, location, speed of travel, or consequences. There is also limited consideration of the costs of changing direction or whether missing the “reef” will instead take us closer to some of these developing storms.
- 2.32 The Treasury gave us various reasons for why other opportunities and challenges were not incorporated into the 2016 projection. These reasons included competing priorities, data availability, and modelling complexity.
- 2.33 In the 2016 Statement, the Treasury notes that for “technical reasons not all elements are reflected in the long-term fiscal projections” and that “due to information gaps and significant uncertainties in future trends and impacts, natural resources are currently difficult to incorporate in long-term fiscal projections”.²²
- 2.34 The Treasury accept that its long-term financial projections are not wide-ranging or entirely realistic. In an internal seminar, it was noted that, unlike financial forecasts, the Treasury’s financial projections are not “a best attempt to predict the future, via comprehensive modelling & expert opinion”.²³

How well do the financial projections support the 2016 Statement?

- 2.35 In our previous report, we noted that the projection in the 2013 Statement did not fully complement the Treasury’s new and developing initiatives, including the broader-based Living Standards Framework or the wider public engagement process. Furthermore, the primary focus on demographics and debt had not changed since 2006.
- 2.36 In preparing the 2016 Statement, the Treasury has made some positive first steps in conceptually modelling social outcomes, and is considering how best to develop the model further. However, we consider that our comments about the 2013 projections still apply.

21 “NZ govt finances like ship sailing towards distant reef, Treasury deputy secretary says; Govt currently in very strong position; Risks include ageing population”, interest.co.nz.

22 The Treasury (2016), *He Tirohanga Mokopuna: 2016 Statement on the Long-Term Fiscal Position*, Wellington, page 13.

23 Bell, M (2016), *The 2016 Long-Term Fiscal Model (LTFM)*, Treasury Forum Presentation, slide 1.

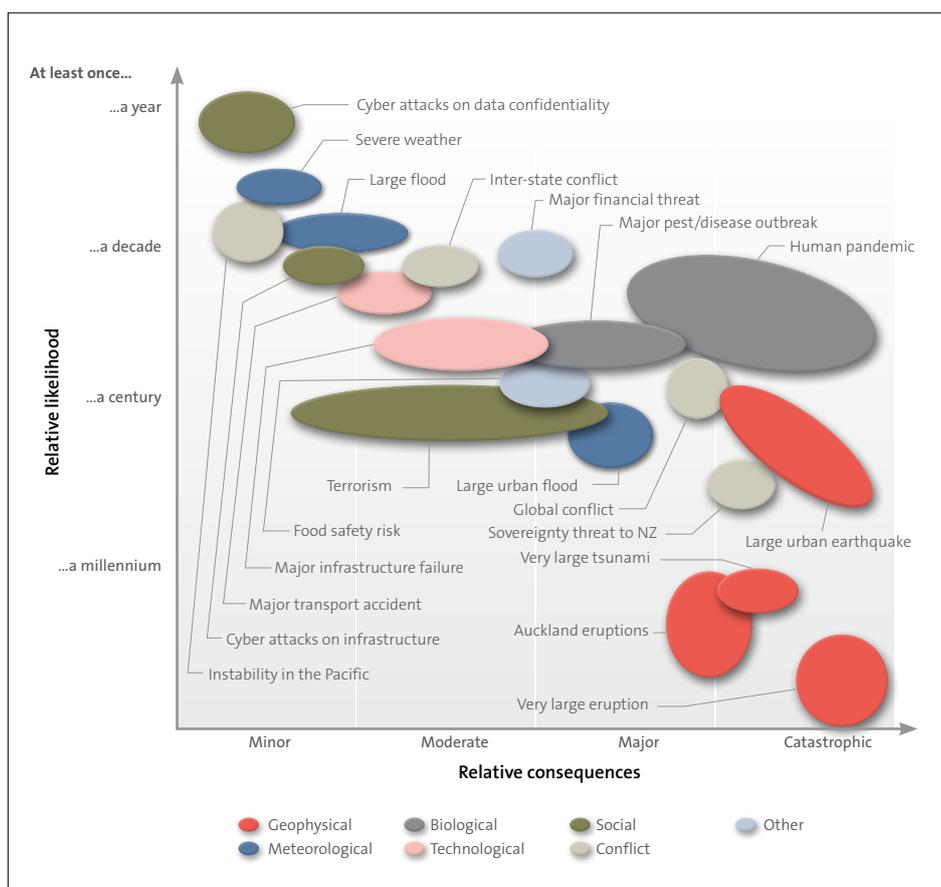
- 2.37 In our view, there are two main issues:
- the financial projections provide a narrow analysis of the wider opportunities and challenges facing New Zealand; and
 - the significance of the financial challenge of an ageing population is unclear.

The financial projections provide a narrow analysis of wider opportunities and challenges

- 2.38 The International Monetary Fund's best practice on analysing and managing financial risks states that "Governments must first have a sound understanding of the risks to public finances before they can be properly managed". Otherwise, decisions cannot then be made about whether to:
- mitigate certain risks through regulation or risk-sharing mechanisms;
 - provide for certain risks through budget contingencies or buffer funds; or
 - accommodate for certain risks through mechanisms such as debt ceilings.²⁴
- 2.39 The financial projections are presented in Chapter 6 of the 2016 Statement. There is little information about the size, scale, timing, interrelationships, and financial consequences of the other challenges and opportunities that are discussed in Chapters 1-5 of the 2016 Statement. In our view, the financial projections could have been better connected to the wider narrative discussion that is included in the 2016 Statement's earlier chapters.
- 2.40 To show the extent of the potential challenges that New Zealand could face, the Department of the Prime Minister and Cabinet in 2011 summarised New Zealand's indicative national risks (Figure 4).
- 2.41 Figure 4 shows that New Zealand could face a considerable number of potential shocks, all of which have different chances of occurring and a range of potential consequences.
- 2.42 Unexpected opportunities may also arise. Better understanding the range of challenges and opportunities, and how they could interact as a set of plausible scenarios, would provide valuable insights into the relative importance of population ageing, the timing and duration of its effects, any important interrelationships, and the wider consequences on the future financial capacity and sustainability of the Government. All of these are important for governments to consider when deciding on how best to plan for and manage the long-term sustainability of public finances.

24 International Monetary Fund (2016), *Analyzing and Managing Fiscal Risks – Best Practices*, Washington DC, page 21.

Figure 4
The Department of the Prime Minister and Cabinet's Indicative National Risks



Source: Adapted from the Department of the Prime Minister and Cabinet (2011), *New Zealand's National Security System*.

2.43 A recently submitted doctoral thesis looked at tax policy responses to natural disasters in New Zealand and Australia and compared pre- and post-disaster funding approaches. The thesis noted that:

Historically, most governments, including Australia, have financed the costs associated with natural disasters only after an event has taken place by reallocating existing funds, increasing taxes, borrowing or applying for international aid.²⁵

²⁵ Palmer, C (2017), *Good tax policy on shaky ground? An assessment of tax policy responses to natural disasters*, Wellington, page 147.

- 2.44 However:
*... pre-disaster financing can lower the volatility of the budget and improve planning certainty for the public sector by building up financial reserves, providing contingent financing and, in the case of insurance or reinsurance solutions, reducing the financial burden on the government after a disaster.*²⁶
- 2.45 The 2016 Statement's financial projections assume that the Government manages the financial challenge of population ageing largely by borrowing money. Financial sustainability therefore mainly "requires the maintenance of prudent and low average levels of debt over time".²⁷
- 2.46 Some options from the 2016 Statement's earlier chapters are also mentioned as ways to lessen this challenge, such as by increasing migration, increasing productivity, and implementing social investment policies. However, it is not always clear how valid these options are or what their relationship is to the challenges and opportunities that the Government might face. For example, Chapter 6 of the 2016 Statement notes that a higher net migration assumption of 25,000 people each year would reduce 2060 net debt to 180% of GDP (compared with 206% in the "base case"). This appears significant, but is a net migration of 25,000 people reasonable given the 2016 Statistics New Zealand median projection of 15,000 people or the 2016 Statement's projection assumption of 12,000 people? Furthermore, what would such an increase do to government revenue or to the productivity growth assumption?
- 2.47 The Treasury considers a prudent level of net debt to GDP to be about 20%. However, the adequacy of this 20% net debt target in response to population ageing or other potential future challenges is not explored as part of the 2016 Statement's financial projections.²⁸

The potential financial challenge of an ageing population is unclear

- 2.48 The 2016 Statement's financial projections show a dramatic increase in superannuation and healthcare costs. However, as we show in Part 3 of this report, the projected scale of the financial challenge relies on the assumption that nothing is done to offset these increased costs and that the resulting long-term operating deficits are entirely funded by increasing debt. Using debt in this way leads to higher and higher finance costs because of the compounding effect of interest.

26 Palmer, C (2017), *Good tax policy on shaky ground? An assessment of tax policy responses to natural disasters*, Wellington, page 148.

27 The Treasury (2016), *He Tirohanga Mokopuna: 2016 Statement on the Long-Term Fiscal Position*, Wellington, page 63.

28 The 20% debt target was discussed in two background papers to the 2013 Statement: Rodway, P (2012), *Long-Term Projections: Reassessing Assumptions, Testing New Perspectives* and Buckle, R A and Cruickshank, A A (2012), *The Requirements for Long-Run Fiscal Sustainability*.

- 2.49 The significance of the assumption that all long-term operating deficits are funded by debt complicates an understanding of the nature of the financial challenge. It is unclear whether population ageing is financially challenging because superannuation and healthcare spending becomes difficult, or whether the financial challenge arises only because of the added assumption that all long-term operating deficits are funded entirely by debt.
- 2.50 The answer to this has important implications for how current and future governments explain and manage the financial consequences of population ageing.
- 2.51 One way to test the relative size of superannuation and healthcare spending associated with the challenges of an ageing population is to compare the 2060 projections to the latest data from other countries in the OECD.
- 2.52 Figures 5 and 6 show the 2016 Statement's 2060 projections for healthcare and superannuation²⁹ spending with the latest spending data in other OECD countries.
- 2.53 Because there will always be differences in how countries design and implement their superannuation and healthcare policies, an exact comparison is not possible.³⁰ However, in our view, Figures 5 and 6 indicate that:
- the projected levels of superannuation spending in 2060 are not out of line with recent spending levels in many OECD countries; and
 - the projected levels of healthcare spending are just above what some other OECD countries have spent in recent years.
- 2.54 Evidence also suggests that as countries become wealthier, their willingness to pay proportionately more for social-related items (such as education, health, and superannuation) increases. If this is correct, then financial projections that hold tax revenues constant as a percent of GDP might be understating feasible funding options. Alternatively, cutting these spending items may not be feasible or acceptable to New Zealanders as part of a 20% net debt target scenario.³¹
- 2.55 The financial consequences of using only debt to fund the resulting projected deficits is another challenge for the Government in the long term.

29 The OECD data uses the term "pension" instead of "superannuation".

30 The OECD's latest data on superannuation spending is for 2011, and its data on healthcare spending is for 2015. The data is sometimes estimated or provisional. For example, the OECD's latest healthcare spending data shows New Zealand at 7.5% whereas the 2016 Statement shows New Zealand at 6.3%.

31 Freeman, D G (2003), *Is health care a necessity or a luxury? Pooled estimates of income elasticity from US state-level data*, Applied Economics, Vol. 35, No. 5, page 497.

Figure 5
The Treasury's 2060 projection for superannuation spending compared to other OECD countries for 2011

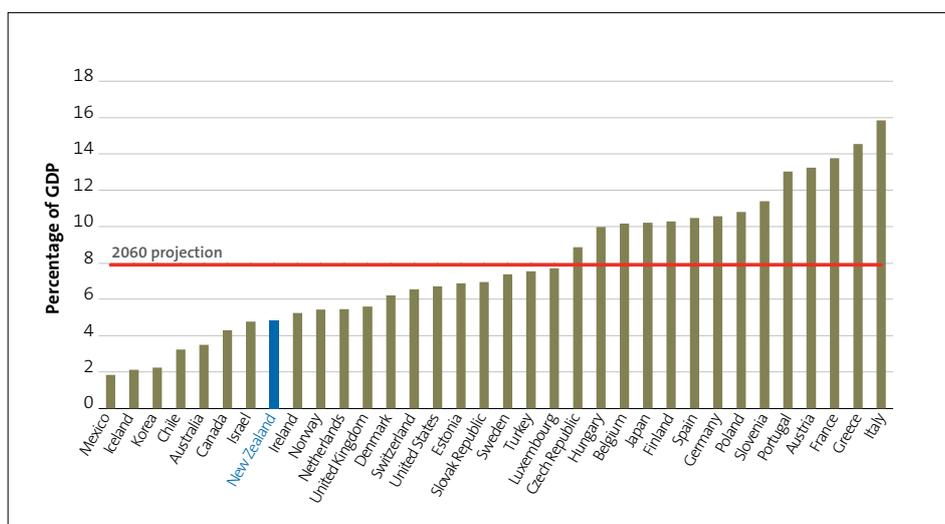
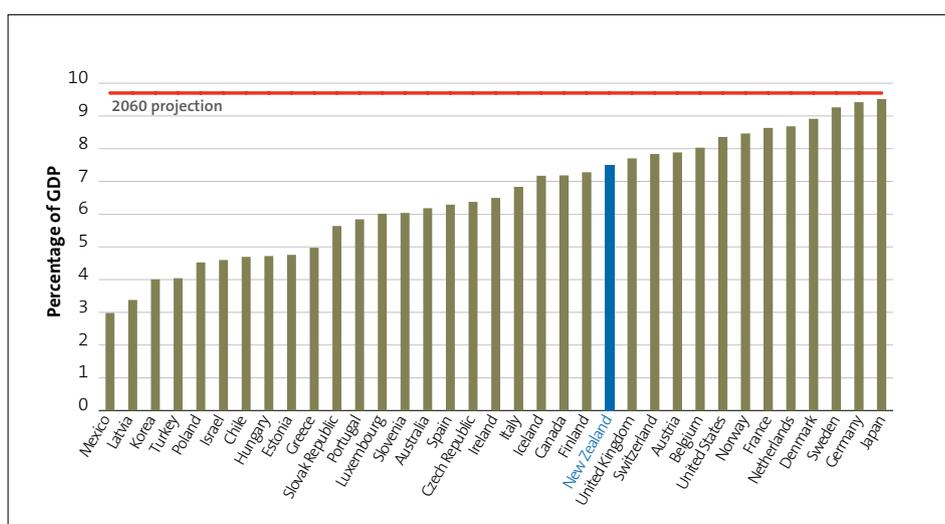


Figure 6
The Treasury's 2060 projection for healthcare spending compared to other OECD countries for 2015



2.56 There is more discussion about the nature of the financial challenge in the background papers provided alongside the 2016 Statement. However, in our view, the 2016 Statement could have done more to explain why the projected spending on healthcare and superannuation in 2060 is considered difficult compared to other countries and other challenges.

3

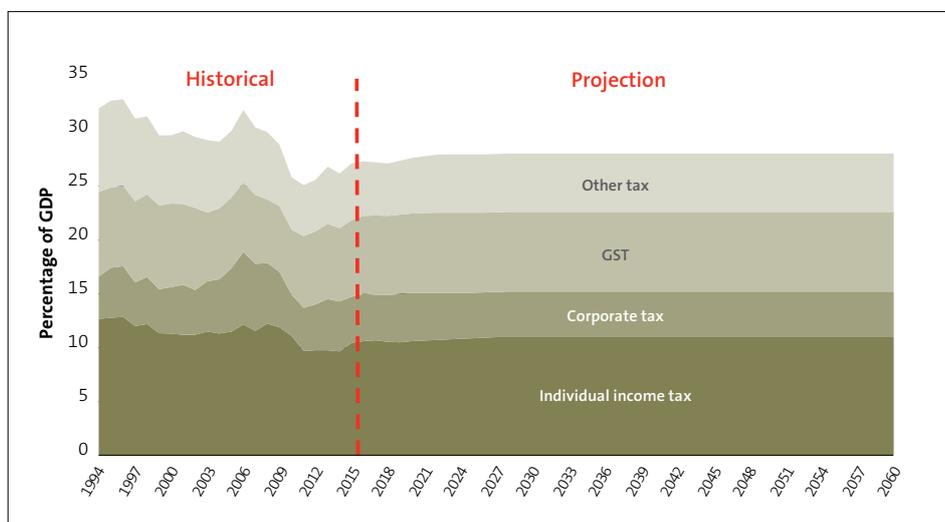
The usefulness of the financial projections

- 3.1 In this Part, we look at the 2016 Statement’s financial projections to 2060. We consider how the projections have changed over time and what the projections tell us about the financial challenges ahead.
- 3.2 We also consider what options the 2016 Statement sets out for the Government to approach these challenges, and the implications for future long-term fiscal statements.

Projecting the financial challenge of an ageing population

- 3.3 The primary purpose of the 2016 Statement’s financial projections is to show “that governments face long-term fiscal challenges, and they have choices about how to manage these pressures”.³²
- 3.4 To do this, the 2016 Statement analyses one future financial challenge and provides two financial projections. The first projection shows the scale of the financial challenge. The second shows how the financial challenge could be mitigated.
- 3.5 These financial projections do not always adequately reflect what could happen in the future, given the context of population ageing. As an example of what we mean, Figure 7 shows how the projected components of the Government’s tax base are held constant as a share of GDP over the projection period. For comparison, we also show the same components from 1994 to 2015.

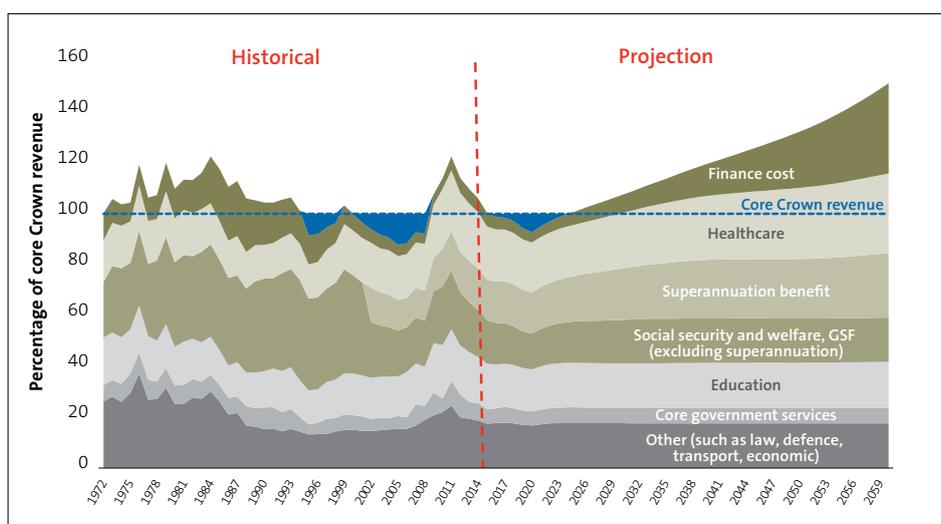
Figure 7
Projection of the components of the Government’s tax base as a proportion of GDP



32 The Treasury (2016), *He Tirohanga Mokopuna: 2016 Statement on the Long-Term Fiscal Position*, Wellington, page 3.

- 3.6 Figure 7 shows that, after a period of transition, the 2016 Statement's projection of taxation revenue is capped at a historical norm of 28.6% of GDP. This percentage and the proportion of the types of taxation are assumed to stay constant despite historical patterns and/or the significant changes that are anticipated to take place in the country's population structure. For example, government revenue could gradually increase above GDP growth when older people work longer or more productively (provided tax thresholds are not adjusted for rising incomes).
- 3.7 Although the Treasury has always been clear in explaining its approach to projections, some of the changes made to the 2016 Statement's projections incorporate a significant element of judgement and we did not always see a consistent application of projection principles. For example:
- it is unclear how far the 2016 Statement's projections are an attempt to project the future financial consequences if current policy settings are maintained, or if history is repeated "on average" and subject to limited and specific (essentially demographic-driven) future changes;
 - in an internal seminar for the 2016 Statement, the Treasury noted that changing projected non-superannuation welfare expenses from a "bottom-up" to a "historical norm" approach had trade-offs that needed to be debated; and
 - including the financial consequences of social investment policies appears at odds with the fixed "what-if" nature of the population-ageing projection. It raises questions about why other scenarios, such as the possibility of further crises, were not analysed.
- 3.8 Figure 8 shows the Treasury's projection of the long-term financial consequences of population ageing on the various components of core Crown expenditure (all in proportion to core Crown revenue, which is shown as the blue horizontal dotted line). For comparison, we also show these same components from 1972 to 2015.
- 3.9 Figure 8 shows that from 1972 to 1992, the Crown was continually in deficit (that is, core Crown revenue was less than expenses). From 1993 to 2008 this position reversed – until the global financial crisis (GFC) and the Canterbury earthquakes in 2008 and 2011, respectively.

Figure 8
Comparison of core Crown expenditure and core Crown revenue



Note: The database we used separates superannuation from social security and welfare only from 2002 onwards.

- 3.10 There are two main reasons why, from 2016 onwards, the Government’s long-term financial position is projected to become unsustainable over the long term:
- government spending continues to exceed government revenue because, as a share of GDP, tax revenue is held constant and healthcare and superannuation costs increase; and
 - finance costs increase significantly because all resulting operating deficits are funded by debt.

- 3.11 In our view, it is difficult to imagine these assumptions would hold over a 40-year horizon because both move away from many of the principles of responsible fiscal management set out in the Act. The duration of these assumptions reduces the reasonableness of the outlook and potentially the confidence that users have in the 2016 Statement’s main messages – particularly when we look at how government finances have moved in the past.

How the projection of the financial challenge compares with previous long-term fiscal statements

- 3.12 Figure 9 shows how the Treasury’s view of the financial challenge of an ageing population has affected the Government’s projected net debt to GDP ratio in each of the four statements. The figure shows how the four financial projections respond to changes in the economic and financial environment at the time of the

projection (such as the GFC and the Canterbury earthquakes), current fiscal policy settings, and any modelling changes.

Figure 9
Net debt to GDP ratios in the four long-term fiscal statements

	2016 Statement	2013 Statement	2009 Statement	2006 Statement
Net debt to GDP at start of projection period	20.5%	27.1%	33.7%	7.9%
Net debt to GDP in 2050	124.4%	118.9%	223.4%	98.7%
Change in net debt to GDP	103.9%	91.8%	189.7%	90.8%

- 3.13 Although all projections show a dramatic growth in net debt to GDP by 2050, the most pessimistic outlook was in 2009, after the GFC. This suggests that current economic circumstances have a significant influence on the Treasury’s projection of the long-term financial sustainability of the Government.
- 3.14 A high net debt to GDP ratio is not always risky but it does signal a reduction in the financial resilience of the Government and, at extreme levels, can limit the Government’s ability to service debt while maintaining public services. A recent OECD report suggests that a prudent “gross” debt to GDP range is between 15% and 75%, depending on the health of the country’s economy.³³
- 3.15 As we noted in our commentary on the 2013 Statement, the net debt to GDP ratio does not fully reflect the effect of wider influences on the financial sustainability of the Government.³⁴ It also leads to a relatively narrow focus on managing financial sustainability that could overlook the effects on the levels of quality of public services.
- 3.16 In our view, the Treasury could consider other approaches that reflect wider influences. The sort of approaches the Treasury could consider might include a more comprehensive balance sheet that shows a wider set of assets and liabilities, or the Integrated Reporting framework³⁵ that shows how six possible “capitals” (financial, manufactured, intellectual, human, social and relationship, and natural) are transformed by the operations and activities of an organisation.

33 Gross debt makes no deduction for financial assets, so prudent net debt ranges will be lower than these OECD prudent ranges. See OECD (July 2015), “Achieving prudent debt targets using fiscal rules”, *OECD Economics Department Policy Notes*, No. 28, page 1.

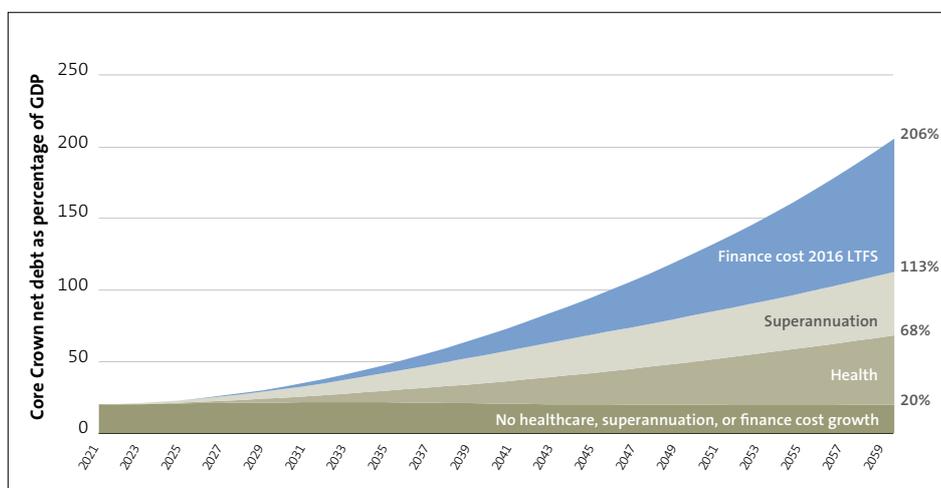
34 Discussed in more detail in our report, *Commentary on Affording Our Future: Statement on New Zealand’s Long-term Fiscal Position* (2013).

35 International Integrated Reporting Council (2013), *The International <IR> Framework*, London, page 13.

What the financial projection tells us about future challenges and opportunities

- 3.17 The 2016 Statement’s projection of the financial challenge shows what could happen if population ageing resulted in increased healthcare and superannuation spending and nothing was done about it apart from financing the resulting operating deficits through increased debt.
- 3.18 Figure 10 uses the 2016 Statement’s projection of the financial challenge to show the relative importance of healthcare, superannuation, and finance costs on the Government’s core Crown net debt to GDP over time.

Figure 10
Components that drive the Treasury’s projection of net debt to GDP



- 3.19 The projection in Figure 10 shows that funding projected increases in healthcare and superannuation by debt alone will seriously compromise the financial sustainability of the Government.
- 3.20 As noted in Part 2, there are many other potential challenges and opportunities that could create a more uncertain future than the 2016 Statement’s projections suggest. Preparing a set of scenarios that captures combinations of these opportunities and challenges would provide an important first step in generating a set of financial projections that allow important and useful insights into the future financial risks, capacity, and sustainability of the Government.
- 3.21 We give some simple examples below of the possible financial consequences of two other challenges the Government could face in the future.

A series of short- to medium-term negative shocks

- 3.22 In the last two decades, New Zealand has experienced three significant and unexpected shocks – the Asian financial crisis,³⁶ the GFC, and the Canterbury earthquakes. These followed earlier crises:
- in around 1976, after the oil price shocks in the early to mid-1970s; and
 - in the early 1990s, shortly after the global share market crash of 1987.
- 3.23 The timing of these shocks in the last 40 years is more frequent than the International Monetary Fund paper's finding that (on average) countries have experienced a significant fiscal shock every 12 years.
- 3.24 Figures 11 and 12 show how the annual growth rate of government revenue and expenses was affected by the consequences of the three recent crises. Generally, revenue growth declined and expense growth increased during those times.
- 3.25 These two periods of crisis, which cover three unexpected shocks, can be used as an indication of what potential financial consequences could follow another set of shocks. Given this historical evidence, it would be reasonable to assume something unexpected could happen every seven to eight years that will have an adverse effect on the Government's short-, medium-, and long-term financial position.
- 3.26 Applying this historical 20-year pattern of crises to the 2016 Statement's 40-year projection means it is reasonable to assume that there could be four or five potential shocks during the projection period. To be conservative, we assumed no extended recovery period and, consistent with the 2016 Statement's projection assumptions, we also assumed:
- no government policy response; and
 - all resulting deficits are funded by debt.

³⁶ During the Asian financial crisis, a serious drought also affected large parts of the country (over the summer of 1997/1998).

Figure 11
Effect of crises on annual growth rate of government revenue

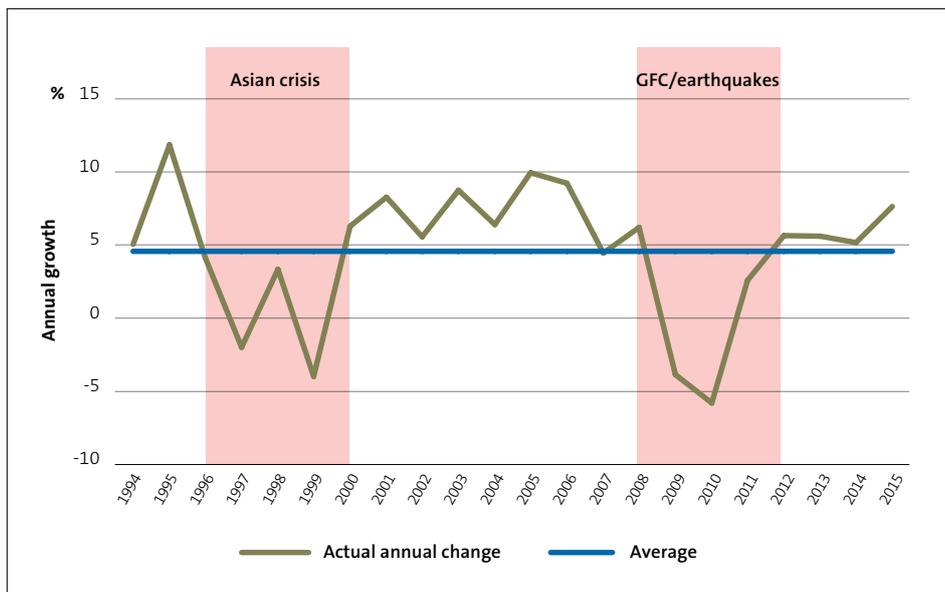
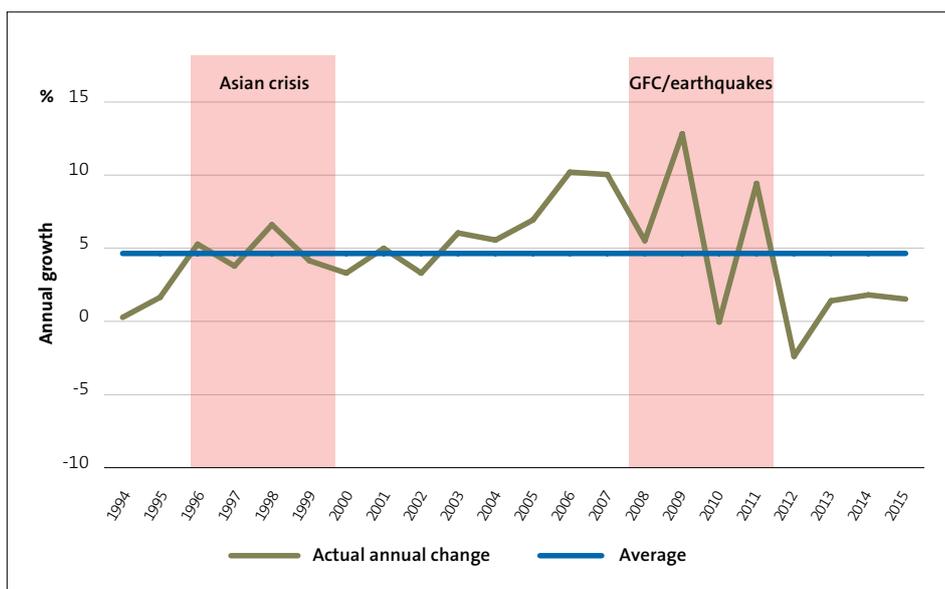


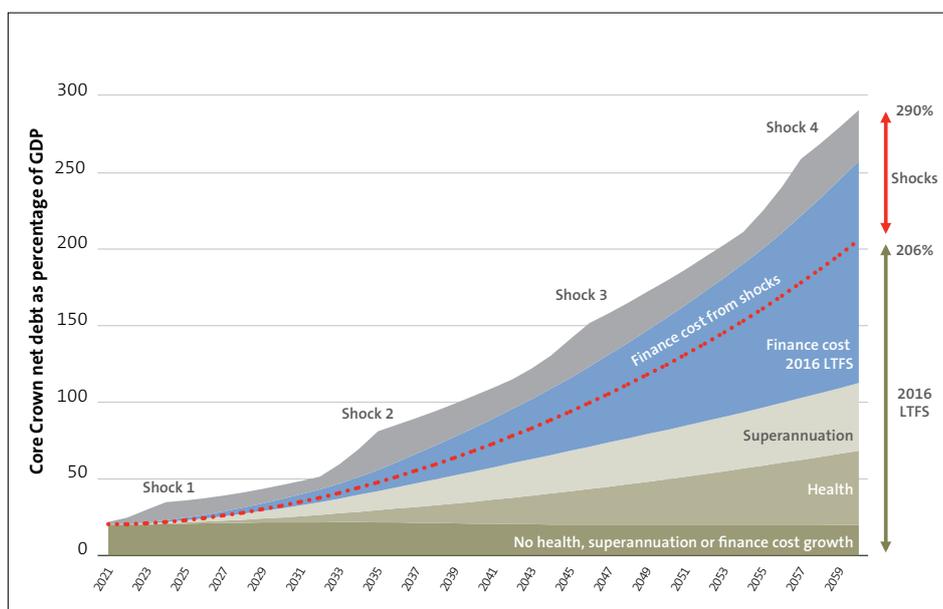
Figure 12
Effect of crises on annual growth rate of government expenses



GFC: Global financial crisis.

3.27 Figure 13 shows that overlaying the financial effects of four potential shocks during the projection period increases the 2016 Statement's original net debt to GDP projection in 2060 from about 206% of GDP to about 290%. In line with the Treasury's original assumptions, a significant effect of the shocks is an increasing interest cost, which we show as above the red dotted line in Figure 13.

Figure 13
Financial consequences of a regular series of shocks



- 3.28 Figure 13 shows that allowing for a potential series of regular shocks as well as an ageing population means not only a significant rise in the magnitude of the financial challenge but also a decline in the time available to prepare for the challenge.
- 3.29 The sudden increases from the four generic shocks could also mean a change in the way that financial resources are planned for and allocated to support the operational planning for these events. According to the International Monetary Fund, relying on measures such as debt funding might not always be enough or appropriate for certain risks.³⁷
- 3.30 A Treasury working paper on modelling shocks also noted that although a stronger Crown balance sheet provides a buffer, it might not always be enough. That is, “in a more significant crisis the adjustment could still fall heavily on taxpayers through fairly rapid changes to tax or government spending”.³⁸

37 International Monetary Fund (2016), *Analyzing and Managing Fiscal Risks – Best Practices*, Washington DC, pages 21-24.

38 Fookes C (2011), *Modelling Shocks to New Zealand's Fiscal Position*, page 27.

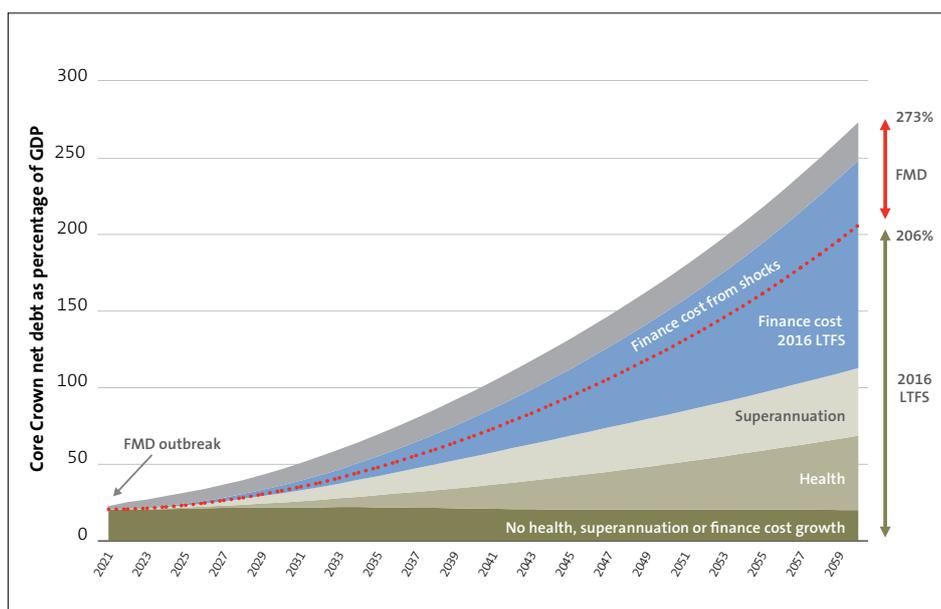
A single more enduring challenge – a foot-and-mouth disease outbreak

- 3.31 The unexpected shocks we described above would be regular but of only a short-to medium-term duration. After the outbreak of foot-and-mouth disease in the United Kingdom in 2001, the Reserve Bank and the Treasury analysed the likely financial impact for the Government of an outbreak in New Zealand. They found that the financial consequences would be significant and enduring.³⁹
- 3.32 The paper was careful to note that an event of this nature would have many uncertainties that cannot be easily captured and modelled. For example, the reactions of trading partners and the effect on the financial sector were factors that were not included.
- 3.33 The paper considered the likely effect on government revenue to GDP and expenses to GDP in the first nine years of the crisis. We used these same ratios and applied them to GDP levels in the 2016 Statement's projection model to approximate the potential effect of a foot-and-mouth disease outbreak starting in 2021. Although the paper implied that government expenses could continue to increase, we held these constant.⁴⁰
- 3.34 Figure 14 shows the likely effect of a foot-and-mouth disease outbreak when added to the superannuation and healthcare increases shown in the 2016 Statement. Based on the comments in the information paper, the potential effect shown in Figure 14 is likely to be conservative.
- 3.35 We did not allow for any ongoing increase in government expenses. If we allowed for government expenses to increase, the net debt to GDP in 2060 would increase to about 357%. This additional impact would be greater than the impact of projected increases in superannuation or healthcare spending alone.
- 3.36 As we saw in allowing for a regular pattern of potential shocks to occur (Figures 11 and 12), an enduring shock means not only a significant rise in the size of the challenge, but also that there is less time available to financially prepare for the challenge.
- 3.37 Furthermore, because of the potential scale, complexities, and wide-ranging effects of such a challenge, the usual post-disaster funding strategies – such as reallocating spending, increasing taxes, borrowing money, or applying for international aid – could become difficult, costly, or not timely enough.

39 The Treasury and the Reserve Bank of New Zealand (2003), *The macroeconomic impacts of a foot-and-mouth disease outbreak: an information paper for Department of the Prime Minister and Cabinet*, pages 5 and 7.

40 The expense to GDP ratios in the 2003 paper included interest costs. We adjusted these ratios downwards to exclude the likely effect of interest costs.

Figure 14
Financial consequences of a foot-and-mouth disease outbreak compared to superannuation and healthcare increases



FMD: Foot-and-mouth disease. LTFS: Long-term fiscal statement.

What options are there to manage the financial challenge of population ageing?

- 3.38 Various options are mentioned in the 2016 Statement as examples of ways to lessen the financial challenge of an ageing population:
- reducing government expenditure as a share of GDP (except superannuation spending) to a level where net debt to GDP stays at about 20%;
 - improving various social investment outcomes through initiatives such as achieving the Better Public Services targets, raising human capital levels through health and education improvements, and reducing regional disparities in measures of well-being; and
 - individually adjusting other factors such as higher net migration and productivity growth, a higher goods and services tax rate, a higher eligibility age for superannuation, or indexing the superannuation payments to inflation rates.
- 3.39 There is also some discussion of the fiscal buffer provided by the 20% net debt to GDP target.

- 3.40 The options refer back to some earlier parts of the 2016 Statement and demonstrate that there are many ways to lessen the financial challenge of an ageing population. However, the way the analysis of these options is prepared and presented in the 2016 Statement limits their usefulness in informing and developing potential funding strategies to mitigate, provide for, or accommodate the financial challenge.
- 3.41 The options are analysed individually and sometimes inconsistently. Some also include questionable assumptions. For example:
- except for two possible changes in parts of the tax base, the financial projections still assume all Crown revenue will remain constant as a share of GDP;
 - the feasibility of holding constant or reducing many areas of government expenditure in the long term is questionable and “how feasible” is not examined;
 - some of the analysis does not show the effect on net debt to GDP⁴¹ so it is difficult to compare with the option to stabilise net debt at 20% of GDP;
 - combinations of options are not considered and, because of potential differences in the timing of implementation, the relative importance of these options might change when measured against the change in net debt to GDP; and
 - except for one, all social investment opportunities assume the achievement of dramatic changes in social conditions with no new public spending.
- 3.42 Other potentially relevant approaches were also not analysed or compared – such as combining certain options, the use of targeted reserves, reducing the net debt target, or greater contributions, either to or from the New Zealand Superannuation Fund. As part of our work we attempted to find out what would happen if the New Zealand Superannuation Fund performed better or worse than expected. We found two issues:
- the way the projection model incorporates the New Zealand Superannuation Fund is overly complicated and does not allow a clear analysis of what would happen if the Fund performed better or worse; and
 - most of the value of the New Zealand Superannuation Fund for offsetting future superannuation costs is after the end of the projection period.
- 3.43 We discuss both of these issues further in Part 4.

41 However, we understand that some net debt to GDP analysis is contained in background papers to the 2016 Statement.

Implications for future long-term fiscal statements

- 3.44 Our additional analysis of shocks is simple and could be improved on. The possible scenarios we analyse include a combination of only two possible challenges. They are intended as examples of the many potential challenges that could affect the ability of future governments to service debt obligations while maintaining levels of public services.
- 3.45 Climate change is another example of a potentially severe and enduring challenge. The United Kingdom's Stern Review of 2006 noted that:
- Using the results from formal economic models, the Review estimates that if we don't act, the overall costs and risks of climate change will be equivalent to losing at least 5% of global GDP each year, now and forever. If a wider range of risks and impacts is taken into account, the estimates of damage could rise to 20% of GDP or more.⁴²*
- 3.46 In our view, the 2016 Statement could have done more to prepare a set of financial projections of different but plausible scenarios that captured combinations of likely future opportunities and challenges.
- 3.47 This information would have provided the first step in preparing management and funding strategies that best reflect the potential nature, scale, and timing of uncertainties and their likely effect on future governments' finances. Potential strategies could include various post-disaster and pre-disaster funding methods, which could then be tested for suitability as part of the scenario and financial projection analysis.

42 HM Treasury (2006), *Stern Review Report on the Economics of Climate Change*, London, page vi.

4

The suitability of the 2016 Model

- 4.1 In this Part, we consider the 2016 Statement's projection model (the 2016 Model). We consider how the projection modelling has changed since 2013, and the reasonableness and robustness of the assumptions used in the 2016 Model.

Description of the 2016 Statement's projection model

- 4.2 The 2016 Model is designed to analyse the financial effects of an ageing population on the long-term financial position of the Government. There are two projections developed in the 2016 Model:
- historical spending patterns – a projection showing the financial implications of population ageing on government net debt; and
 - stabilise net debt – a projection showing how the financial implications of population ageing on government net debt could be reduced by reducing government spending.
- 4.3 The 2016 Model is based on a set of spreadsheets created before 2006 to model medium-term fiscal strategies. The 2016 Model has been substantially updated and improved from the 2013 Model,⁴³ but its basic structure remains the same. It has two parts:
- using the latest Economic and Fiscal Update forecasts as its base, it projects increased spending on healthcare, superannuation, and education⁴⁴ associated with population ageing – all other revenue (mainly tax) and expenses (such as non-superannuation welfare) revert to a fixed historical-based percentage of GDP; and
 - showing how the large increases in spending on healthcare and superannuation flow through and affect the operations, investments, and financing of the Government, in a standardised statement of financial performance and position, every year through to 2060.
- 4.4 The main measure of the Government's financial position is core Crown net debt without deducting the assets of the New Zealand Superannuation Fund.⁴⁵ The assumptions behind this measure is one of four we consider more closely at the end of this Part.

43 Details of the changes are included in a background paper to the 2016 Statement: the Treasury (2016), *Demographic, Economic and Fiscal Assumptions and Modelling Methods in the 2016 Long-Term Fiscal Model: Background Paper for He Tirohanga Mokopuna: 2016 Statement on the Long-Term Fiscal Position*.

44 Education spending is also based on population projections, but the increase is small.

45 The 2016 Statement also includes other measures including net worth and net debt after deducting the assets of the New Zealand Superannuation Fund.

Our high-level review of the 2016 Model

- 4.5 As in 2013, we carried out a high-level review of the 2016 Model's mechanics, internal logic, and presentation. We also examined independent reviews of the 2013 and 2016 Models.

Significantly improved presentation, mechanics, and quality control

- 4.6 During our 2013 review, we identified weaknesses in the robustness and usability of the 2013 Model. There were modelling problems, accounting inconsistencies, and limited ability to carry out "real world" analysis of uncertainty and shocks.
- 4.7 Based on this and other reviews, the Treasury has substantially improved the mechanics, accounting logic, and presentation of the 2016 Model. The 2016 Model's quality controls have been strengthened. We found no arithmetic errors, or errors in formulas.
- 4.8 However, the financial projection spreadsheets remain complex and at times difficult to follow. For example, understanding how the New Zealand Superannuation Fund will affect future core Crown borrowing is important but difficult to follow in the 2016 Model.
- 4.9 We expected to see that for the New Zealand Superannuation Fund, as the core Crown pays contributions to and receives contributions and taxes back from the Fund, these amounts would directly affect core Crown borrowing and interest costs. Instead, the 2016 Model assumes that any change in the Fund's net assets directly affects core Crown borrowing and interest costs. This modelling approach is problematic because changes in the Fund's net assets also include any market value gains and losses and movements in reserves, which would not normally affect core Crown borrowing.
- 4.10 The Treasury also found this approach difficult to explain and plans to improve the way the New Zealand Superannuation Fund is incorporated into the model.
- 4.11 Another example is how projected capital expenditure is modelled. The 2016 Model uses a theoretical accounting relationship rather than an assessment of likely capital needs or with any apparent reference back to the Treasury's 10-year capital intentions plan.
- 4.12 Although the 2016 Model has significantly improved from earlier versions, it remains our view that the 2016 Model would benefit from the Treasury obtaining expert financial modelling advice.

The modelling remains deterministic and linear

- 4.13 In 2013, the then Auditor-General was “concerned that the level of uncertainty implicit in the projection may not be readily understood by readers”.⁴⁶ We also commented on the lack of feedback loops in the 2013 Model. For example, we expected to see an increase in the interest rate on debt as the amount of debt increased – particularly to the levels that the financial projection anticipates.
- 4.14 Although much of the structure and the mechanics of the 2016 Model have improved, it remains limited in its ability to allow for real-world factors such as feedback loops and uncertainty. For example, it still does not include the above interest rate feedback effect. These limitations were highlighted in two recent working papers⁴⁷ produced by the Treasury, which looked at how feedback loops and uncertainty could affect the Government’s long-term financial position.
- 4.15 Both papers concluded that feedback loops and uncertainty were material to projecting the Government’s long-term financial position. To show this, the authors prepared a simplified model that was consistent with the Treasury’s long-term fiscal projection framework. One of the papers referred to the lack of analysis of feedback loops and uncertainty within the Treasury’s long-term fiscal model as “serious” limitations.

Key person risk remains

- 4.16 During our work on the 2013 Statement, we noted that, for all practical purposes, the 2013 Model was maintained and operated by only one person in the Treasury. Although we were impressed with this person’s commitment, competence, and knowledge of government, he appeared regularly overburdened and in need of some specialist support.
- 4.17 The Treasury has brought in staff to help from time to time, but the succession risk remains high. The Model’s maintenance and operation is still, for all practical purposes, done by one person.

External reviews

- 4.18 There have been two external reviews of the Treasury’s long-term financial modelling since 2013:
- As part of an external review of the Treasury’s fiscal policy advice, Teresa Ter-Minassian, International Economic Consultant and former Director of the International Monetary Fund’s Fiscal Affairs Department, looked at the

46 The Treasury (2013), *Long-term Fiscal Projections: Reassessing Assumptions, Testing New Perspectives*, Wellington, page 6.

47 Ball, C, Creedy, J, and Scobie, G (2015), *Long-run Fiscal Projections under Uncertainty: The Case of New Zealand*, Wellington, pages 1 and 20. Creedy, J and Scobie, G (2015), *Debt Projections and Fiscal Sustainability with Feedback Effects*, Wellington, page 27.

Treasury's long-term analysis work in the 2013 Statement. Although noting that the scope of the analytical work in 2013 was impressive, Ter-Minassian suggested that improvements could be made to the 2013 Model in integrating feedback loops and incorporating sensitivity analysis of shocks to help demonstrate the need for fiscal buffers.⁴⁸

- Professor Norman Gemmill, Chair in Public Finance at Victoria University of Wellington, reviewed the 2016 Model's assumptions and logic. He noted the basic approach and structure of the projection model is broadly sensible for making long-term financial projections and also noted the improvements that had been made since 2013. However, he observed an important internal tension or weakness because the future projections continue to use historical norms and unchanged policies. Professor Gemmill considered that this could cause some confusion about whether the Statement involves projections of the most likely scenarios or unchanged policy outcomes.

The reasonableness of the assumptions in the 2016 Model

- 4.19 The starting point for the long-term financial projections is the Treasury's Fiscal Strategy Model, which is used to populate the first five years of the projections (from 2016 to 2020). The assumptions underlying the Fiscal Strategy Model largely reflect current government policy settings.
- 4.20 From 2021 to 2060, the approach to projecting the long-term financial position moves away from the Fiscal Strategy Model. The move occurs in three main ways:
- All revenue and many expenses move to a constant, historical-based percentage of GDP.
 - Economic and financial parameters, such as the Consumer Price Index, labour productivity, and interest rates move to a constant target.
 - Healthcare, superannuation, and education costs are allowed to increase based on changes in New Zealand's population structure.
- 4.21 To ensure that its assumptions are reasonable and complete, the Treasury uses expert information and guidance, and tests these assumptions internally and externally. For most of the expenses and all the revenue groups, the Treasury assumes they revert to a constant historical percentage of GDP (usually the median or average for the last 20 years). The Treasury also assumes there will be no fluctuations in the economy or any natural or financial crises.
- 4.22 The Treasury is clear that many of the constant, historical-based assumptions are not its best estimate of what could happen in the future. These assumptions are part of a "what-if" analysis that is designed to show what would happen to

48 Ter-Minassian, T (2014), *External Review of the Treasury's Fiscal Policy Advice*, Washington DC, page 50.

government debt only if population changes increased the country's healthcare and superannuation costs.

- 4.23 In our view, using constant, historical-based assumptions in a financial projection would not normally be reasonable and supportable – unless there was an expectation of reverting back to a historical trend.
- 4.24 We noticed that there have been many changes to the mechanics of the 2016 Model and the assumptions underlying the projection. For example, there were 26 variables that capped revenue to GDP ratios in the 2013 Model, and these were reduced to seven in the 2016 Model. Although improvements are expected, substantial and ongoing changes can raise questions about the consistency and comparability of the projection process from one long-term fiscal statement to the next.
- 4.25 Many of these changes are also important for understanding the 2016 Statement's projections. However, it was generally difficult to locate the Treasury's discussion and analysis of these changes, some of which were included in background papers to the 2016 Statement. For example, there was no explanation in the 2016 Statement for why projected healthcare expenditure in 2060 fell from 10.8% in the 2013 Model to 9.7% of GDP in the 2016 Model.

Four examples of how the Treasury's assumptions are developed

- 4.26 As part of our review, we considered four of the main assumptions behind the 2016 Statement's financial projections.

Anticipating tax revenue

- 4.27 Projecting tax revenue is important in the 2016 Model. The projections assume:
- tax revenue is capped at a constant 28.6% of GDP (after an initial adjustment period). A small change in this assumption can be significant. For instance, if this assumption changed from 28.6% to 30.0%, net debt to GDP in 2060 would fall from 205.8% to 150.0%; and
 - there is no allowance for personal income tax revenue to increase because of increasing wages and salaries.
- 4.28 The constant projected tax revenue is based on an estimated average tax revenue to GDP ratio over a 20-year historical period. The modelling approach was chosen to reflect a constant historical norm but recent history has shown substantial variation in this ratio, ranging from 34.9% in 1990 to 25.0% in 2011.

- 4.29 Although 28.6% is within a reasonable range, we do not consider that holding tax revenue constant at 28.6% of GDP is reasonable when projecting the long-term financial position of the Government. For example, the constant percentage assumes there can be no additional tax revenue earned from older people working longer or in response to the increasing expenses associated with an ageing population. Furthermore, no allowance is made for any additional revenue earned as personal incomes rise.
- 4.30 Personal income tax is a large part of total tax revenue (about 45% in 2015) and, without regular increases in tax bracket thresholds over time (to keep them in line with rising incomes), the income tax revenue to GDP ratio would rise. This is called fiscal drag. In the past, governments have increased tax brackets about every 10 years to reduce the tendency for personal income tax rates to rise as incomes rise.
- 4.31 Although there are legitimate reasons why fiscal drag should not be assumed to continue indefinitely, a more accurate assumption might have been that fiscal drag could continue for periods of time. Alternatively, a case could also be made where taxpayers, projected to have much higher average incomes by 2060, are willing to pay higher average tax rates than their counterparts in 2016.⁴⁹
- 4.32 The 2016 Model includes the functionality to enable a fiscal drag assumption during the 40-year projection period.

Anticipating healthcare expenditure

- 4.33 The 2016 Statement projects an increase in public healthcare spending from 6.2% of GDP in 2016 to 9.7% in 2060 with an ageing population. We consider it reasonable to assume that the healthcare spending ratio will rise. For example, other OECD countries with an ageing population are anticipating increases in public healthcare spending relative to GDP.
- 4.34 The healthcare spending projection in the 2016 Model assumes that two factors push up public healthcare costs relative to GDP: rising healthcare prices relative to average consumer prices (the Consumer Price Index), and faster growth in the sector relative to the wider economy (that is, unrelated to demographic changes or price changes).
- 4.35 These non-demographic factors raise healthcare costs 35% faster than normal real output growth and 25% faster than normal consumer price growth. These two factors are behind most of the increase in healthcare costs during the 40-year projection period. If we removed them both, healthcare spending to GDP would increase only slightly during the projection period.

49 This issue is examined in some detail by J Creedy and N Gemmill (2014), *Can fiscal drag pay for the public spending effects of ageing?*, New Zealand Economic Papers, Vol. 48, pages 183-195. This paper was originally prepared as a 2013 Statement expert panel presentation and background paper.

- 4.36 International evidence suggests that consumer spending on healthcare could rise faster than for other elements of GDP. This is through the higher price growth and proportionately greater demands for healthcare that come when incomes are higher. The Treasury's healthcare spending projections are based on some historical evidence for this pattern in New Zealand.
- 4.37 However, despite these increases, the 2060 projection of 9.7% of GDP is well below the projection of 10.8% in the 2013 Statement. This is because of a simplification of the method used to project healthcare spending, where the projected levels of health-related demographic, productivity, and price growth all decline compared to 2013.
- 4.38 The short period (the past 15 years) for which non-demographic healthcare spending trends are estimated, and relatively high volatility in the New Zealand data also suggest that the reliability of these trend estimates is limited. This, in turn, suggests a need for greater sensitivity testing of those projection assumptions. A similar argument applies to the comparable analysis of education spending.
- 4.39 Given the large future financial impact of these trends, we consider that more analysis and discussion of the uncertainty in the healthcare spending projection would be helpful for users of the 2016 Statement.

Anticipating outcomes from social investment opportunities

- 4.40 The 2016 Statement includes an analysis of the financial consequences that could happen if various outcomes from the Government's current social investment policies were achieved at different points in the future.
- 4.41 For example, the equitable Māori outcomes scenario, if successful, is expected to reduce future financial costs of social assistance and protection. Under this scenario, the projected net debt to GDP ratio in 2060 would reduce from 205.8% in the 2016 projection to 173.9%.
- 4.42 The equitable Māori outcomes opportunity projects the long-term financial effect of "bringing Māori outcomes to the same level as the rest of the population within two generations (35 years)".⁵⁰ These outcomes include criminal justice, education, and welfare-related benefits. The scenario is projected to generate a net reduction in core Crown spending (tax revenue effects are ignored) of about one percentage point of GDP in 2060, mainly through lower welfare spending.
- 4.43 The various opportunities presented as part of the social investment analysis is a positive first step. However, significantly more work is needed to ensure that the assumptions the analysis and findings rely on are reasonable and complete.

⁵⁰ The Treasury (2016), *The Benefits of Improved Social Sector Performance – Background Paper for He Tirohanga Mokopuna: 2016 Statement on the Long-Term Fiscal Position*, Wellington, page i.

For example, except for the expert case studies scenario, all other opportunities presented assume dramatic changes in social conditions and outcomes at no additional financial cost. There is also no analysis of the effects these scenarios might have on other aspects of the projections individually or collectively. As such, whether the effects are material is unknown.

- 4.44 Although additional analysis and explanations are available in a background paper,⁵¹ these limitations affect the usefulness of the analysis and its findings. In our view, acknowledging them would have been helpful to users of the 2016 Statement.

Assessing net debt

- 4.45 The Treasury recently summarised the rationale for using net debt as a financial indicator and management tool:
- Net debt can be seen as better reflecting the underlying strength of the Crown balance sheet because it incorporates gross debt ... as well as liquid financial assets held by the government.*⁵²
- 4.46 In 2009, the Treasury prepared a new definition of net debt that excluded the New Zealand Superannuation Fund's assets. The Treasury's reason for excluding these assets was because the assets "are ring-fenced for long-term fiscal pressures and their time varying and volatile nature can complicate communication of a net debt target".⁵³
- 4.47 In our commentary on the 2013 Statement, the then Auditor-General stated that the exclusion of New Zealand Superannuation Fund's assets from net debt was debatable and resulted in a higher projection of Crown net debt than if those assets were included.
- 4.48 The New Zealand Superannuation Fund was set up in 2001 to help "pre-fund" an expected increase in superannuation spending, associated with the relative size of the ageing population. The assets created from payments into the New Zealand Superannuation Fund were achieved by diverting current tax revenue from other uses, and the anticipated future superannuation payments would come from general core Crown spending.
- 4.49 In our view, if New Zealand Superannuation Fund assets are excluded from this financial sustainability indicator, then projected debt associated with future superannuation payment liabilities that the assets are intended to finance should also be excluded. The main core Crown net debt measure in the 2016 Statement,

51 The Treasury (2016), *The Benefits of Improved Social Sector Performance*, Wellington.

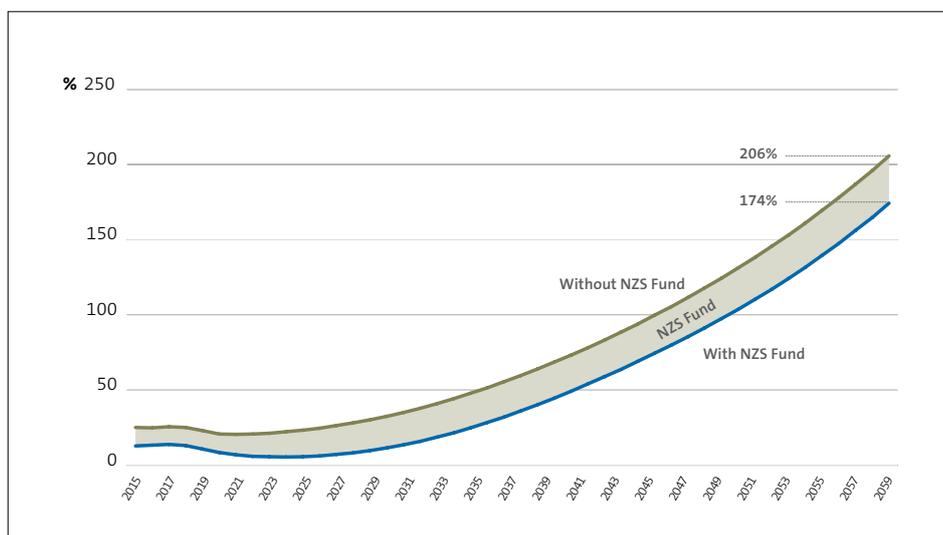
52 The Treasury (2014), *Fiscal Indicators and the Financial Statements. A Guide to How Fiscal Indicators Are Compiled from the Financial Statements*, Wellington, page 7.

53 The Treasury (2009), *Fiscal Strategy Report*, Wellington, page 39.

like previous versions, excludes the former, but implicitly includes the latter by projecting all future superannuation payments as part of core Crown expenses.

- 4.50 The 2016 Model currently assumes some contributions from the New Zealand Superannuation Fund to the Crown to offset superannuation spending. These contributions (excluding tax) occur from 2033 to 2060. The average annual contribution is about one half of 1% of the Fund's total financial assets.
- 4.51 This level of contribution means that by 2060 only 7.5% of the total financial assets of the Fund have been paid back to the Crown as contributions, despite projected net debt rising to unsustainable levels.
- 4.52 Figure 15 shows core Crown net debt to GDP ratios with and without New Zealand Superannuation Fund assets.

Figure 15
Core Crown net debt to GDP ratios with and without the New Zealand Superannuation Fund's assets



- 4.53 We note that the 2016 Statement also includes the measure of core Crown net debt after deducting the assets of the New Zealand Superannuation Fund. We remain of the view that the New Zealand Superannuation Fund's assets should be deducted in the calculation of net debt to GDP when used as the main financial sustainability indicator in the 2016 Statement.

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Office of the Auditor-General
PO Box 3928, Wellington 6140

Telephone: (04) 917 1500
Facsimile: (04) 917 1549

Email: reports@oag.govt.nz
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